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GEOGRAPHIC INTELLIGENCE REPORT

THE KRASNOVODSK - GASAN-KULI COASTAL REGION



CIA/RR-GR-38

30 January 1954

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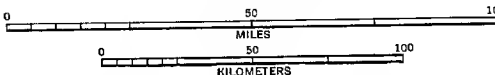


13025

MINERAL RESOURCES

- ▲ Petroleum.
- Coal
- Salt
- ▼ Barites

Scale 1:2,500,000



SOURCE:
SREDNYAYA AZIYA (Central Asia)
1:1,500,000 GUGK, Moscow, 1953

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THE KRASNOVODSK - GASAN-KULI COASTAL REGION

I. Introduction

This study is an analysis of selected geographic aspects of the Krasnovodsk - Gasan-Kuli Coastal Region. The region fronts on the Caspian Sea and includes most of the coastal extent of the Turkmen SSR. The northern limit is marked by the latitude $40^{\circ}15'N$ and the southern limit, by the Soviet-Iranian frontier. The northern boundary lies approximately 15 miles north of the city of Krasnovodsk. From north to south the region stretches across approximately 190 miles. Across the southern half of the coastal region, the eastern limit lies 15 to 25 miles inland from the Caspian shore and closely parallels the longitude $54^{\circ}15'E$. Over the northern half, between the latitudes $39^{\circ}00'N$ and $40^{\circ}15'N$, the eastern boundary runs in a north-northwesterly direction and passes through the Neftedag (Nebit-Dag) oil fields. It delimits an area whose inland extent is quite variable because of the uneven configuration of the coast line.

II. Terrain and Vegetation

Most of the Krasnovodsk - Gasan-Kuli Coastal Region is desert lowland. The principal exceptions to the low character of the landscape are the Krasnovodsk Plateau, two mountainous promontories jutting into Krasnovodsk Gulf (Krasnovodskiy Zaliv), a highland spine on Cheleken Peninsula (Poluostrov Cheleken) and several isolated peaks. Outstanding terrain features include escarpments

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of the plateau, mud volcanoes, ephemeral lakes which are salt-encrusted or baked clay depressions in the dry season, salt pans (Figure 1), sand dunes, and a large swamp along the lower Atrek which becomes impassable during the rainy season. As a result of recent pronounced lowering of the level of the Caspian Sea, the coastline has become more regular as bay and inlet bottoms have been exposed, islands and the mainland have been united, and spits have broadened. Nevertheless, the northern coast, from the Krasnovodsk Peninsula (Krasnovodskiy Poluostrov) to 39°00'N latitude, remains much more indented than the coastline to the south.

The sparse vegetation cover of the coastal region consists of desert varieties of trees, shrubs, grasses, and herbs. Halophytes (plants conditioned to soil impregnated with salts) are common throughout the coastal lowland (Figure 2). Shrubs and trees are usually low and widely spaced with twisted, gnarled branches and small leathery leaves (Figure 3). In the spring rainy season most of the desert plants enter their vegetation period and frequently form a dense cover. In spring, in addition to the green appearance of the landscape, a multitude of vivid flowers add color to many parts of the desert. In the hot dry summer, leaves fall and grasses become brown and lifeless.

The northernmost part of the region encompasses the southern portions of the Krasnovodsk Plateau and a sandy coastal plain. This sandy desert lowland extends north-south and includes the entire length of the 21-mile long spit which terminates at Cape Krasnovodsk (Mya Krasnovodskiy). West of the Krasnovodsk Plateau, the lowland is about 10 miles wide. In places along the sandy spit it is less than 1 mile

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Figure 1. A salt pan or clear during the dry season. In the rainy season it may become filled with water.



Figure 2. The halo, typical brush cover of hummocks in the area near the Jordan River.



Figure 3. Marsh shrub vegetation.



Figure 4. Wetland escarpment bordering the eastern part of the area of Khamovishk.

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wide. The sandy desert consists mainly of long, fixed north-south trending sand ridges interconnected by short transverse chains of sand. Enclosed in this grid-like pattern of ridges are numerous basins 60 to 80 feet deep. This sandy desert lowland supports a sparse cover of short grass and bushes about 3 feet high.

The western escarpment of the Krasnovodsk Plateau rises steeply to a height of 200 to 300 feet above the coastal lowland. Its face is dissected by many deep, parallel ravines. The broken escarpment at the southern edge of the plateau is about 650 feet high, and near Cape (Mys) Kuba-Sengir it rises to an elevation of approximately 900 feet (Figure 4 and air photo 1). The average altitude of the plateau top is about 650 feet, but elevations vary greatly from place to place. The plateau is a steppe plain interrupted by small hills, sharp, steep ridges, and flat-bottomed depressions. The clayey plateau surface contains only occasional sand dunes.

The Shakadam and Ufra promontories which jut into the Krasnovodsk Gulf have east-west trending mountainous ridges which run parallel to the plateau face (Air photo 2). The Shakadam ridge, near which the city of Krasnovodsk is located, reaches a height of 610 feet. The elevation of the Ufra ridge slightly exceeds 425 feet. Pertau Spit, stretching southwestward from the Shakadam promontory, has an elevation of 85 feet below sea level but rises 7 feet above the level of the Caspian Sea.

In the southern part of the Krasnovodsk Plateau about 50 percent of the land is covered with vegetation. The vegetation cover reaches

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30 inches in height and consists primarily of wormwood (similar to sage brush of Western America) and solyanka (a squat halophyte). Blyurgun, a small shrub used for camel feed, grows in association with solyanka. Wormwood areas often contain a few black saksaul trees, twisted hardwoods devoid of leaves and from 13 to 20 feet tall. Black saksaul wood deteriorates slowly and makes a good fuel.

Shor Balkhanskiy, a large poorly drained lowland, lies between Krasnovodsk Plateau and Kardzha Peninsula. Until recently it was a bay of the Caspian Sea. During the rainy season it is covered with water or salty mud, while in the dry season white salt crystals cover the spongy surface. Two small islands are located in Krasnovodsk Bay directly west of Shor Balkhanskiy.

Kardzha Peninsula is 30 miles long and 20 miles wide. Its surface is a low plain covered by barchans (crescent-shaped sand dunes) (Figure 5). The highest elevation is about 170 feet. Salty depressions occupy nearly 20 percent of the peninsula.

The vegetation varies according to the type of soil. On the more stable sands, both black and white saksaul grow in open stands. On the shifting sands vegetation consists of saksaul and several types of bushes which drop their short leaves and twigs in the dry season. In the salty depressions and along the seashore stunted halophytes and grasses are found. On the parts of the seashore where sands are cemented, the vegetation is very scanty and consists of scattered bushes 10 to 30 inches in height.

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OTR/01-02-28

[20 January 1991]

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MAPS AND AERIAL PHOTOGRAPHS
(Enclosures)

Western Turkmen SSR, (CIA 13025); 1:2,500,000. X

AMS N502 Series, Sheets NK 39-12, NJ 39-4, NJ 39-8, NJ 40-1,
NJ 40-5, NJ 40-9 (Photographic copies); 1:250,000.

Air Photo 1. The escarpment of the Krasnovodsk Plateau, immediately X
southeast of the city of Krasnovodsk.

Air Photo 2. The Ufra promontory. 4

Air Photo 3. The city of Krasnovodsk. X

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Figure 1. Burial mounds.



Figure 12. A part of the lower Atrek in summer. The dry river bed is to the left.

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The lowland joining Dardzha and Cheleken peninsulas consists of newly exposed sea bottom as well as former islands and peninsulas. This area has a rolling landscape with sandy heights alternating with low salt pans and salt marshes (solonchaks). Cheleken Peninsula is a winged headland with the Kerfal'dzha Spit stretching about 11 miles from the north shore and the Dervish Spit extending about 12 miles from the south shore. Both spits are sandy with elevations entirely below sea level. Landforms on Cheleken Peninsula are diverse. Sand and solonchak lowlands (Figure 6) are found on the margins of the peninsula, the broken Chokhrok (Chokrak) chain of hills occupies the west-central part of the peninsula (Figure 7). Low, active, mud volcanoes are in the west and a steep escarpment parallels the western shoreline (Figure 8). Both sand hills and barchans surround the highlands (Figure 9). The greatest extent of barchans is in the eastern part of the peninsula and numerous salt pans are interspersed with the dunes. The Chokhrok Hills rise approximately 350 feet above the Caspian Sea. They are dissected by deep ravines. Craters of some of the mud volcanoes are about 6 feet in diameter (Figure 10). In places, there are elevations consisting of hard sheets, called "kirs," which are composed of rocks and sand cemented by oil blown from old volcanoes. Most of these elevations have precipitous slopes.

On the Cheleken Peninsula brushy shrubs and saksaul form a cover 11 feet high and grasses are scattered throughout. In areas of cemented sands and salty soils, only widely dispersed shrubs are found.

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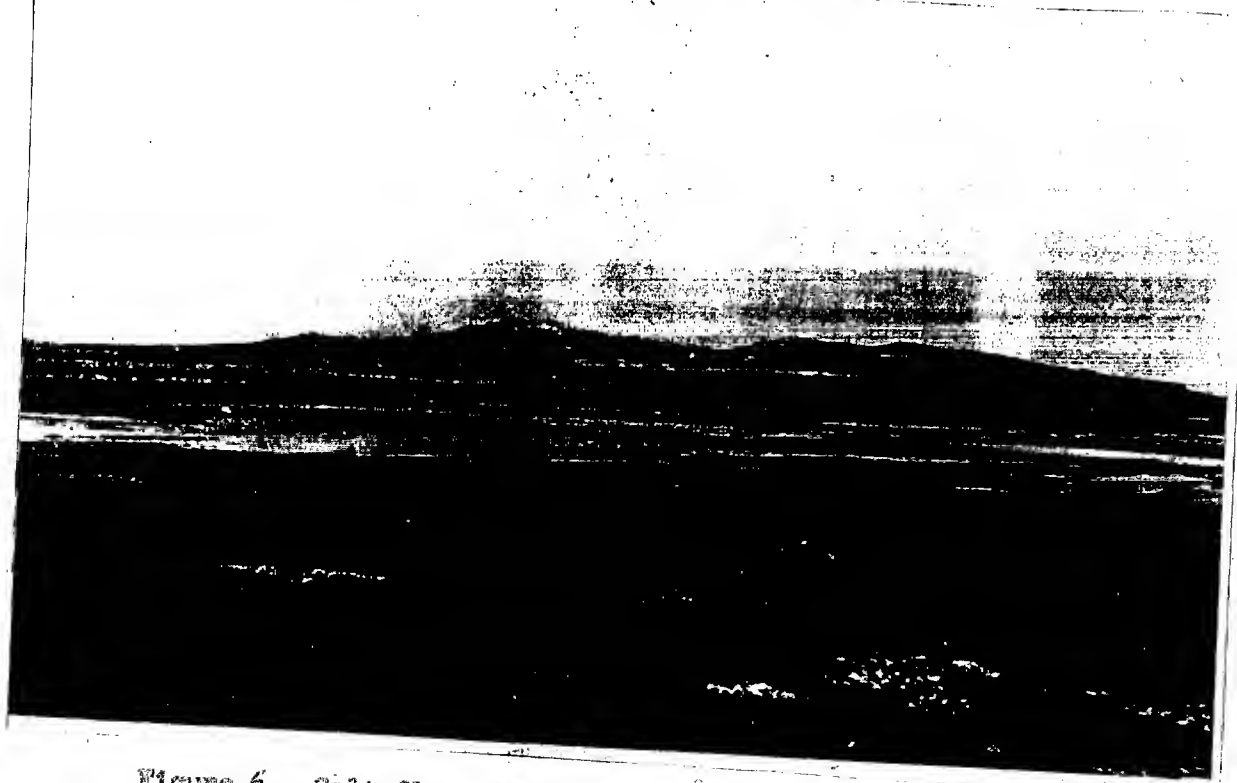


Figure 6. Salt flats near the Choleken hills. These flats are marshy during the rainy season.



Figure 7. The rough Chokbrok hill land in the western part of Choleken Peninsula.

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Figure 8. The escarpment at the western edge of Cheleken Peninsula. Since the photograph was taken, a narrow sandy beach has probably emerged at the base of the escarpment.



Figure 9. Sand hills on the Cheleken Peninsula.

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The sandy desert Peski Darzhi-Kum lies east of Cheleken Peninsula and contains rows of barchans and large, north-south ridges of sand 130 feet high. Farther to the east is the great pan-shaped salt marsh depression Shor Kel'kor which is 25 miles in diameter. Neftedag, an oil-producing hilly section of salt domes rises in the center. The elevation of Neftedag is 150 feet. Active mud volcanoes and "kir" sheets are common features in the immediate vicinity of Neftedag. Average elevation of the salt-encrusted Kel'kor is about 65 feet below sea level.

Terrain between Shor Kel'kor and the lower Atrek River has local differences, but essentially it ^Sconsists of a rolling lowland desert containing sand ridges and dunes, solonchak depressions, and clay pans. Other small but numerous landscape features are burial mounds and tombs and the remains of ancient irrigation systems. South of Zaliv Uzun-Su and inland from the coast, the parallel sand ridges and depressions have a general north-south orientation. In general, elevations range from 65 feet below sea level to about 130 feet above. The most prominent height is a small volcano Gora Gek-Patlauk, about 300 feet above the Caspian Sea Level. Near Chikishlyar several mud volcanoes rise above the surrounding area (Figure 11). A number of the volcanoes emit mud and gases. The coastline south of 39°00'N is regular with few inlets.

From the Cheleken Peninsula southward to Geokcha-Kuyu the vegetation consists of scattered clumps of halophytes and only a relatively few stands of saksaul. South of Geokcha-Kuyu, small sedge plants about one foot in height are dominant. A short legume (milk vetch) is found among

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them and is used for livestock feed. In addition there are many low ephemeral spring-flowering plants. In valleys with cemented sand they outnumber the sedges. Near the lower Atrek River low, annual, ephemeral plants and scattered bushy shrubs make up the vegetation cover. The vegetation period extends from March to the end of May. The land remains barren until the short secondary autumn vegetation period. During the high water period of the Atrek River, the lower valley and delta are an impassable morass filled with reeds and bullrushes. During the dry season sand hills, salt flats, clay pans and meadows predominate.

Ogurchinskiy and Kamysly-Ada islands are the 2 most important islands offshore from the Krasnovodsk - Gasan-Kuli Coastal Region. Both are elongated lowland strips. Ogurchinskiy Island is a sandy island about 8 miles southwest of the tip of the Dervish Peninsula. It has a length of about 21 miles and a maximum width of 1 1/2 miles. Kamysly-Ada Island is 1 mile south of Ogurchinskiy. It is about 3 miles long and 1/3 of a mile wide.

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III. Hydrography

A. Inland Features

Most of the inland hydrographic features in the Krasnovodsk - Gasan-Kuli Coastal Region are characterized by their ephemeral nature - water bodies become prominent in the landscape only during the spring rainy season. There are no permanent streams. Numerous, deep, steep-walled ravines dissect highland areas. Dry river beds, rain water catchment basins, and wells (salty and fresh) are unevenly distributed throughout the region. A large swamp lies along the lower Atrek River. The largest of the ephemeral water bodies are Shor Kel'kor and Shor Balkhanskiy.

Solonchaks and takyr are the two major types of depressions which become filled with water in spring. Solonchaks, or shors, are salt marsh depressions which are usually full of water in the rainy season but become dry, uneven, spongy, and salt-encrusted during the dry season. Takyr are shallow muddy lakes during the rainy season; in early summer as the water evaporates they become impassable quagmires; for the remainder of the dry season they are level, hard, clay pans with mud cracks in the form of polygons. These water collecting depressions are widely scattered throughout the coastal region. For the nomadic herdsmen, many of them serve as important sources of surface and ground water.

Wells are common in the sandy desert lowland of the Krasnovodsk Peninsula and most of these contain fresh water. A water pipeline extends from the wells located near Cape Tarta to Krasnovodsk. On the

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Krasnovodsk Plateau fresh and salt water wells are found near the plateau ridges and at the bottoms of some of the sinks. A few springs are also located near the edge of the plateau. Cheleken Peninsula also has numerous wells but a large number are salty. A number of hot springs and salt springs are found on Cheleken Peninsula.

During the spring high water period and in early summer, the lower Atrek Valley is an impassable labyrinth of distributary channels, reed-filled swamps, and sand hills. At this time the waters of the Atrek may reach the Caspian Sea even though clearly defined, stable channels to the sea are not present. The average width of the main channel of the Atrek is 30 to 65 feet but at its terminus it is approximately 5 feet only. During the high-water season the waters of the Atrek may cover an expanse 3 1/2 miles wide. In the dry season, flow in the Atrek ceases and stagnant pools alternate with stretches of dry river bed (Figure 12). Ice does not form on the lower Atrek.

3. The Caspian Sea

The level of the Caspian, which has been periodically dropping, has reached its lowest stage in 400 years. The Caspian now lies 92 feet below mean sea level. As a result of the recent recession there have been many changes in the coastline; beaches have broadened, bays have diminished in size, and islands have become peninsulas. The most conspicuous examples of these changes are the transformation of Cheleken Island into Cheleken Peninsula and Balkhashkiy Bay into Shor Balkhanskiy, a salt marsh. Gasan-Kuli, once a gulf port is now nearly 5 miles inland. Fifty years ago the entrance to Krasnovodsk Bay was easily

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09 June 68. A part of the Lower Atarak in summer. The dry river bed is to the left.

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navigable by large freighters but at the present time such ships are limited to two dredged channels, and only shallow draft fishing boats can move elsewhere in the bay.

The coast in general can be described as a low, flat shore with negligible surf and sandy beaches. From Dervish Peninsula to Dardzha Peninsula and at the Krasnovodsk Spit there are submerged shoals. Elsewhere approaches are clear. A shallow offshore beach approach extends for 85 miles from the Iranian border northward to Cape Chachuk. The offshore gradient for this part of the coast is about 6 feet per mile except at the outlet of Gasan-Kuli Bay where the gradient is 1 foot per mile. Elsewhere along the coast the slope is greater and off the western shore of the Dervish Peninsula the depth is 12 feet.

Near the shore daily variations in sea level are caused by changes in wind direction since there are no tides. Northwest and west winds raise the level while southeast and east winds lower the level. Currents are northerly. In the northern half of the region, the sun reflecting off the small gulfs and nearby salt lakes sometimes makes shorelines unrecognizable and distances difficult to estimate. In the north thin ice forms on a narrow strip along the coast but it does not hinder navigation. Krasnovodsk Gulf freezes over only in severe winters but even then navigation is possible.

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IV. Climate

The Krasnovodsk - Gasan-Kuli Coastal Region has a desert climate with extreme aridity and sharp annual and daily variations in temperature. Summers are hot and winters are cold. Temperature variations are greater in summer than in winter. Autumn is the best season for human comfort. The climate is not as severe as that of the Kara Kum desert expanse located in the interior of the Turkmen SSR. The Caspian Sea exerts a moderating influence over the coastal region which results in milder winters, cooler summers, greater cloud cover, and higher wind velocities.

A. Temperature

Average monthly temperatures are above freezing throughout the year. At Krasnovodsk the average temperature for the coldest month, January, is 37°F. The warmest month is July with a mean of 84°F.

During winter (December through February) the average daily minimum temperature lies below 40°F. It reaches the freezing point only in January when it is 32°F at Krasnovodsk and 30°F at Gasan-Kuli. In winter the mean daily maximum does not rise above 50°F. Subfreezing temperatures can occur as early as November and as late as March. Winter weather is changeable and tends to alternate between warm and cold spells. The absolute winter minimum is 1.1°F. The absolute maximum is 66°F.

During the latter part of April and in May a rapid transition to high summer temperature occurs. In the hottest months, July and August, the range between average night and day temperatures is from 75°F to 90°F. From June through August mid-afternoon temperatures approaching 100°F are not infrequent. Early morning temperatures seldom drop below

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60°F. Summer temperatures as high as 110°F (at Uzun-Ada) and as low as 50°F (at Krasnovodsk) have been recorded. The oppressiveness of summer heat is substantially ameliorated by the strong evaporation caused by dryness of the atmosphere. Activity by even the acclimatized local populace is seriously curtailed by the intense heat of afternoon. Over sandy expanses the ground may heat up to a temperature high enough to cause skin burn upon contact. Relatively high temperatures continue until late October when they rapidly give way to winter cold. In September and early October, nights become quite cool.

B. Precipitation

Precipitation in the coastal region is meager. The annual total over most of the region averages only 4 to 5 inches. The amount increases south of Chikishlyar where the average is 7 inches. Variations from year to year are great. With the exception of the extreme south, most of the precipitation falls between November and April. During this period the monthly precipitation averages four-tenths of an inch or more. The highest averages occur in March and April when eight-tenths and nine-tenths of an inch occur. Six months of the year are almost rainless. From May through October the average monthly rainfall does not exceed two-tenths of an inch. Rains normally occur on only one or perhaps two days per month.

In the extreme south most of the precipitation occurs from October through April. The average fall for each of these months is six-tenths of an inch or more. March is the wettest with an average of one inch. From May through September monthly averages of four-tenths of an inch or less are usual.

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Precipitation throughout the coastal region occurs primarily as showers. Thunderstorms are rare and snow is negligible. The few light snowfalls of winter produce ground covers of only short duration.

C. Winds

The basic pattern of air movement is monsoonal in character. Throughout the winter easterly winds blowing from the interior of the continent are dominant. Winds from the northeast quarter appear to be most prevalent in winter. In summer the flow of air is reversed and westerly winds prevail. In the north summer winds are mainly from the northwest quarter. In the south the most frequent winds range in direction from northwest to southwest. The monsoonal flow, however, is disrupted by land and sea breezes of diurnal periodicity. These breezes are most pronounced during the warm months. Land breezes blow offshore during the night and early morning; sea breezes begin blowing onshore in late morning and are strongest in the afternoon. Sea breezes penetrate 20 to 25 miles inland but land breezes are felt for only 10 to 15 miles seaward.

Wind velocity appears to be generally higher in the south than in the north. At Chikishlyar winds blow strongly the year around, averaging 15 to 18 miles per hour in summer and 8 to 15 miles per hour in winter. A marked feature of wind conditions at Chikishlyar is the exceptionally infrequent occurrence of calms. Through the course of the year winds at Krasnovodsk have mean velocities ranging between 8 to 15 miles per hour. During the cold months, at Krasnovodsk, calms are recorded for 30 to 40 percent of observations taken at 0700 and 1300. Gale winds (velocities

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An excess of 34 miles per hour) are not infrequent. At Krasnovodsk 3 to 5 gales are experienced in all months except January, February, and October. Strong winds are particularly troublesome to the traveller because of the great quantity of dust which is raised. Sand particles and pebbles are carried by winds of gale force.

D. Visibility Restrictions

Dust haze is the principal restriction to visibility. It is common throughout the year but exerts maximum effect on visibility during the summer. The atmosphere is relatively free of dust during the few short periods when a widespread snow cover exists. In the summer months dust haze is frequently dense enough to make navigation along the shore difficult by obscuring or obliterating shore features. Dust storms develop with high wind speeds. When winds of gale force are blowing, visibility is cut to only a few yards. During the day the dust content of the atmosphere is usually greatest during the hours of greatest heat.

Fogs are a hindrance to visibility primarily over the Caspian Sea. Fog is an early morning phenomenon for a very limited distance inland. Fogs are most frequent during January, February, and March and are rare in summer.

E. Cloud Cover

The frequency of cloudy days (mean cloudiness of 80 to 100 percent) is fairly low. From November through March cloudy days can be expected on 5 to 10 days of each month. The average number of clear days (mean cloudiness of 0 to 20 percent) is approximately the same.

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Minimum cloudiness occurs during the hot weather season from June through September when less than 4 cloudy days per month occur. At this time periods of virtually cloudless skies lasting for as long as a week are common.

F. Length of Day

Daylight lasts for approximately 9 1/2 hours in December and increases at a rate of approximately one hour per month to a maximum of about 15 hours in June. The length of day then begins to decrease at the above rate toward the December low. In December the sun rises at about 0715 and sets around 1645; in June sunrise occurs at approximately 0430 and sunset, at about 1930. For the entire year natural illumination is normally sufficient for ordinary outdoor activity for approximately one-half hour before sunrise and after sunset. This figure varies with weather conditions and can be lowered considerably by dust haze. The period of complete darkness (except for moonlight and starlight) varies slightly through the course of the year. In December complete darkness begins approximately 1 1/2 hours after sunset and terminates 1 1/2 hours before sunrise. In June this interval approaches 2 hours.

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V. Population and Settlement

The population of the Krasnovodsk - Gasan-Kuli Coastal Region is extremely sparse, averaging less than 2.5 persons per square mile over most of the area. The centers of greatest concentration are Krasnovodsk, Chelaken and Imeni 26 Bakinskikh Komissarov (Vyshka) in the northern part of the coastal region and Gasan-Kuli, the largest settlement near the southern limits. The population density in the immediate vicinity of these towns exceeds 25 persons per square mile.

In the area west of Krasnovodsk between Cape Krasnovodsk and Kuli-Mayak, a salt extraction village to the north, the population density fluctuates between 2.5 and 25 persons per square mile. Along the coastline are a number of tiny fishing villages. Canning establishments are located at two of the larger fishing settlements of Kianly (Tarta) west of Krasnovodsk and at Kizyl-Su, near the southern extremity of Krasnovodsk Spit. A fish fertilizer plant and boat repair facilities are also reported at Kizyl-Su.

Krasnovodsk, with an estimated population of 35,000, is the major settlement along the entire Turkmen coast. The city is located on the northwestern shore of Krasnovodsk Bay (Krasnovodskiy Zaliv) (Figure 13). To the west is the long narrow Krasnovodsk Spit. The northern extent of the town is bounded by a rocky escarpment several hundred feet in height. Krasnovodsk is the western terminus of the Turkestan Trunk Rail Line and of pipelines from Nebit-Dag to the southwest. It is an important transshipment point of oil, cotton, salt, wool, grain and Turkmen rugs. Fish canneries, a shipyard, railroad repair shops, clothing mills, gypsum

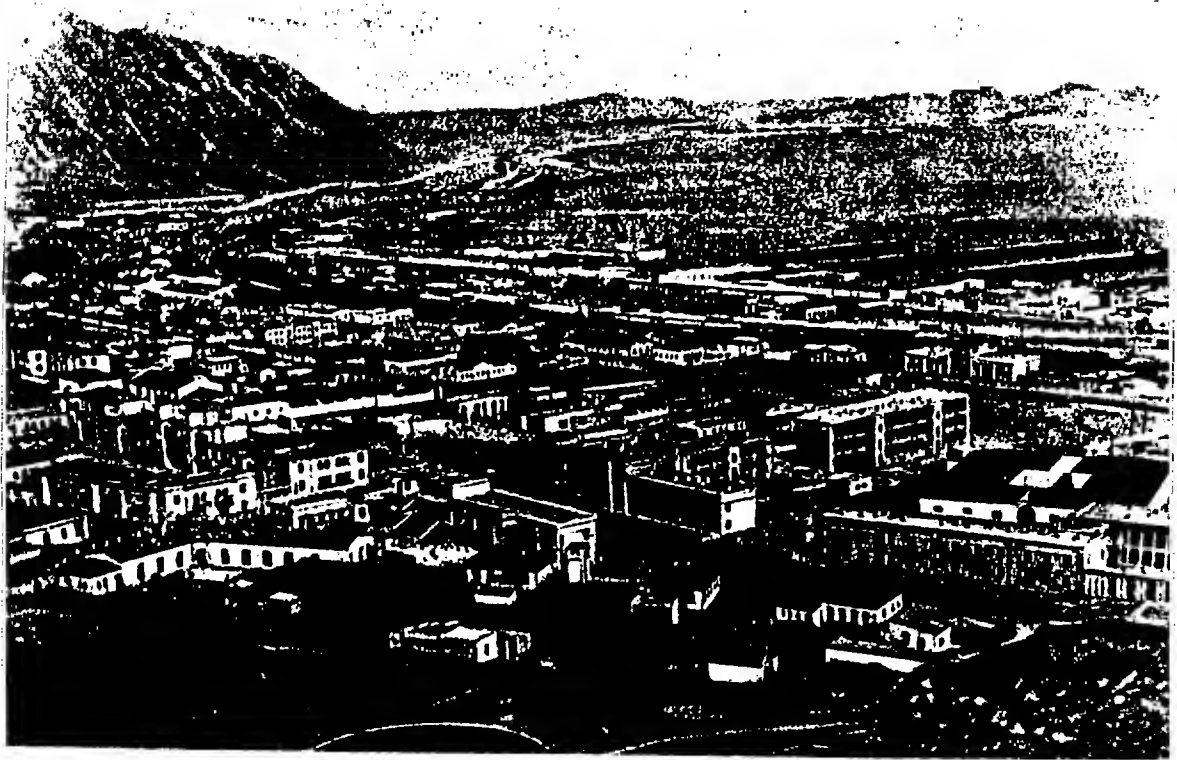


Figure 13. A view of Krasnovodsk with Krasnovodsk Bay in the background.

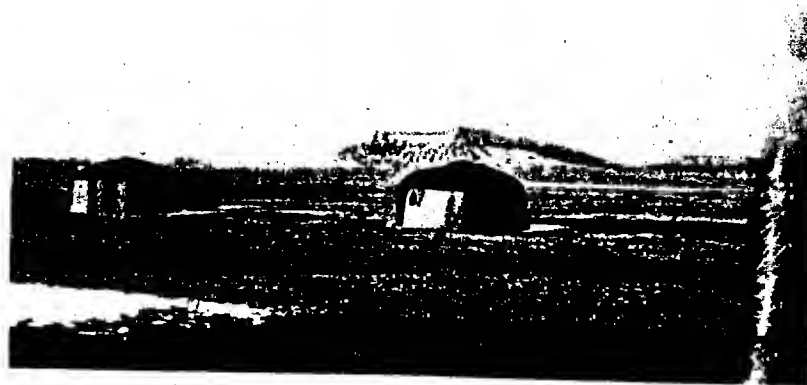


Figure 14. Yurt on the Krasnovodsk Plateau.

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works and an oil refinery also contribute to the city's economic importance. A 12-inch pipeline, which parallels the Turkestan rail route, carries refined petroleum products southeastward to Ashkhabad. This pipeline is located 160 to 330 feet north of the railroad and lies approximately 3 feet underground.

One-story, white-washed stone houses with flat roofs predominate. Larger buildings have appeared only recently. Yards are covered with pebbles or asphalt and surrounded by stone walls. Streets of the city are wide and straight and laid out in a rectangular pattern (aerial photo 3). Most of the streets are covered with asphalt and run from the coastline to the rocky cliffs. Fresh water is obtained from Baku and by the distillation of sea water. In recent years some brackish ground water north of the city has been used for the development of city parks and the planting of trees.

Settlements east of Krasnovodsk are located chiefly along the Turkestan Trunk Line. The port of Ufa, located across the bay east of Krasnovodsk, contains docks, shipyards, rail yards, and a petroleum storage area. The port is connected to Krasnovodsk by both rail and highway. East of Ufa a number of railroad stations and tiny settlements, consisting mainly of only isolated shacks, are strung along the rail line at distances of 4 to 10 miles. A barracks area lies adjacent to the rail line to the southeast of the Belek station, 50 rail miles from Krasnovodsk. The proposed route of the defunct Turkmen Canal lies immediately to the south of the rail line. There is no evidence of construction activity on the canal in this area.

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On the Krasnovodsk Plateau population is extremely sparse, averaging less than 2.5 persons per square mile, and unequally distributed. Animal husbandry, chiefly camel raising, is the basic economic activity of the nomadic population. During spring and autumn more intensive livestock herding is carried on in the area immediately north of Krasnovodsk. A winter camp site of the nomadic herdsmen is located approximately 5 miles northeast of Krasnovodsk. The nomadic camps consist of dome-shaped yurtas (Figure 14). Springs and small depressions which collect rain water are the most common sites for these nomadic camps.

On the sandy coastal area south of the Turkestan Railroad population is very sparse. A few Turkmenian fishermen are located along the coast. On Cheleken Peninsula, however, the population density increases, ranging between 2.5 and 25 persons per square mile. A number of small villages connected by dirt roads and trails are located mainly along the coastline of the peninsula. The population of Cheleken Peninsula is composed principally of industrial workers engaged in the mining or processing of salt, ozocerite, iodine, bromine and oil. The extraction of minerals is concentrated mainly in the highland part of the peninsula. Fishing is an important secondary activity. Rock salt, which is mined in the eastern part of the peninsula, is both exported and used locally for salting fish. The peninsula is the largest producer of ozocerite in the Soviet Union. Oil production on Cheleken Peninsula was believed to be almost exhausted before the war. Since 1947 further exploration and secondary recovery methods have been instituted.

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The largest settlement is the port of Cheleken located on the steep western slopes of the peninsula. The prewar population of Cheleken was about 4,000. Ships stopping at Cheleken provide the principal means of transporting minerals and other freight to and from the peninsula. Other coastal settlements located at intervals of 5 to 9 miles include Kayra-Yuz to the north; and Kara Gel' and Ogomana along the southern coast. Dagadzhik lies in the interior 9 miles east of Cheleken. The villages consist primarily of an asymmetrical agglomeration of buildings. Nomadic encampments are located along the southern coast of the peninsula and in the vicinity of Kayra-Yuz. The narrow elongated Ogurchinskiy Island, located on the shipping route between Krasnovodsk and Chikishlyar to the south, is eight miles south of the Cheleken Peninsula. It is noted for fishing. The tiny settlement of Ogurchinskiy has a fish cannery. Most fishing activities along the Turkmen coast are collectivized.

The Neftedag oil fields are located in the Shor Kel'kor east of the Cheleken Peninsula. These fields form the largest petroleum producing region in Central Asia. Production is centered at Imeni 26 Bakinskikh Komissarov. The population of the town is approximately 5,000. The surrounding area is covered by numerous oil derricks and mining shacks interconnected by roads radiating from Imeni 26 Bakinskikh Komissarov. Petroleum extracted in the vicinity of Imeni 26 Bakinskikh Komissarov is transported by rail and pipeline to the refinery at Krasnovodsk and to tank farms at both Krasnovodsk and Nebit-Dag. The tiny oil mining settlement of Baba-Kodzha is located about 2 miles to the northeast. The rail spur which connects Imeni 26 Bakinskikh Komissarov with Nebit-Dag,

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15 miles to the northeast on the Turkestan Line, passes through this settlement. Fresh water for the settlement of Imani 26 Bakinskikh Komissarov is brought in by rail from Krasnovodsk and Kizyl Arvat.

In the barren coastal stretch extending more than 100 miles south of the Neftedag petroleum region, the population density is less than 2.5 persons per square mile. Most of the population is concentrated in the southern half of the area. Herding activities are greatest in this area during the autumn and spring grazing seasons. The numerous trails most often lead to wells and water collection pits which provide the only source of water for the nomadic herdsmen.

Fishing is also important in the southern part of the Turkmen littoral. During early spring, in February and March, coastal waters of Gasan-Kuli and of Ogurchinskiy Island yield the greatest fish catch. During this period fishing artels from the entire Caspian coast gather here. Later the boats move toward the Azerbaydzhan coast to the west. According to current Soviet maps Chikishlyar, a small village 9 miles north of Gasan-Kuli, serves as a landing for ships which formerly docked at Gasan-Kuli. However, with the lowering of the Caspian Sea, even here ships are required to dock several miles offshore and only small native craft are capable of reaching the shore.

The shallow ground water table in the vicinity of Chikishlyar permits the cultivation of vineyards, pomegranates and melons which are not grown in other coastal villages.

From Chikishlyar southward to the USSR-Iranian border population density averages between 2.5 and 25 persons per square mile. The villages

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of Gasan-Kuli, located 6 miles north of the international border, is one of the largest fishing centers of the Turkmen coast. In 1932, the population of Gasan-Kuli numbered about 3,770. Although no current census data are available for the settlement, it is doubtful that Gasan-Kuli has expanded since it now lies about 5 miles from the Caspian coast and ships no longer are able to dock here.

Gasan-Kuli is the only settlement in the region which has buildings constructed primarily of wood. Most of the single story board or log houses stand on heavy wooden piles (Figure 15). Donkeys are kept under the buildings. Roofs consist of thin grey planks. A narrow veranda with railings is also built around many of these houses. Fish and nets are frequently hung from the railings to dry. Carpet-making is an important handicraft industry of the native women. Houses in Gasan-Kuli form a haphazard pattern with no streets or sidewalks. Rains, distilled sea water and the Khadzhi-Makhta wells a short distance north on the road to Chikishlyar are the chief sources of potable water. Rushes and reeds growing in the Atrek Valley 6 to 9 miles away are the main sources of fuel.

The population density increases significantly in the broad Atrek River valley east of Gasan-Kuli. Year-round pastures are available for livestock raising. East of the small settlement of Adzhi-Yab, near Gasan-Kuli, are numerous nomadic camps located on the many distributaries of the Atrek. These camps are spaced at distances of 2 to 6 miles. The southern part of the coastal region has been designated as a bird preserve.

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Figure 18. A wooden house in the fishing settlement of Lyonsville.

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VI. Ethnic Composition

The population of the Krasnovodsk - Gassan-Kuli Coastal Region is predominately Turkmenian. Secondary ethnic groups include Great Russians, Kazakhs, Armenians, Azerbaydzhani and Uzbeks. A few Iranian and Kurdish tribes live along the Turkmen-Iranian border. It is reported that the Moslem Kurdish tribes are particularly hostile to strangers.

The Turkmenian people, composed of various Turkic tribes, live chiefly in the rural areas and engage in nomadic herding and sedentary agriculture. They also engage in fishing along the Caspian Coast. Russians are concentrated mainly in the larger settlements.

The Turkmenian people have dark complexions and are tall and slender. The stature of the men is frequently accentuated by tall sheep-skin fur hats. Many of the men have beards (Figure 16). Both men and women wear colored clothing of various dark red shades. Outside garments include one or more cotton robes. The women wear head bands and many metal ornaments (Figure 17). The Turkmenian language is a Turkic dialect influenced by various minority tribal and ethnic groups. The majority of the Turkmenian people are Sunnite Mohammedans.

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Figure 17. A Turkmenian woman.

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VII. Transportation

Land transportation in the Krasnovodsk - Gasan-Kuli Coastal Region, for the most part, is primitive. The transportation net includes many trails, a limited number of dirt roads, and a trunk railroad. Sea lanes radiate from Krasnovodsk which is also a major stop for air traffic.

A. Railroads

The major railroad crossing the region is the Turkestan Trunk Line which runs eastward from Krasnovodsk. The rail line is a single-track, Russian gauge (5 feet) railroad connecting the principal cities of Central Asia. The western part of this trunk line is aligned generally east-west along the lowland strip which parallels the southern escarpment of the Krasnovodsk Plateau. According to Soviet timetables for 1950, a passenger train makes one round-trip per day between Krasnovodsk and Nebit-Dag, 95 rail miles to the southeast. Along this part of the route the speed of the trains averages 23 miles per hour. A Soviet gauge spur line connects the town of Nebit-Dag with Imeni 26 Bakinskikh Komissarov. Passenger trains make 3 round-trips per day between the towns of Nebit-Dag and Imeni 26 Bakinskikh Komissarov.

B. Roads and Trails

The transportation net is composed principally of dirt roads and trails. In the north, the roads and trails are concentrated near Krasnovodsk and on Cheleken Peninsula, and in the south, in the vicinity of the Atrek Lowland. Within the coastal region, no direct road connects Krasnovodsk and Gasan-Kuli. Desert routes between Krasnovodsk and

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Gasan-Kuli consist of widely spaced paths or trails. Most trails traversing the area connect scattered wells and grazing areas, and some lead to populated places beyond the coastal region. Some trails may be used by motor vehicles, but camels provide the most common means of transport (Figure 18). After rains some roads and trails may be impassable.

In the north most roads and trails radiate from Krasnovodsk. The only improved dirt road in the coastal region extends westward from the Krasnovodsk rail head to the vicinity of Kianly (Tarta) where it turns northward. The road follows the coast and passes through the village of Kuuli-Mayak at the northern boundary of the coastal region. It then continues northward to Kara-Bogaz-Gol. The remainder of the roads are unimproved. The road which runs northeastward from Krasnovodsk to Suli, located slightly beyond the coastal region, is a through route across the Krasnovodsk Plateau.

At the western end of Cheleken Peninsula a circular net of dirt roads connects the villages of Dagadzhik, Cheleken, Kara-Gel' and Ogomana. From this Cheleken net a trail runs across the entire breadth of the coastal region to Dzhebel, on the Turkestan Trunk Line.

In the south an important unimproved road extends eastward from Chikishlyar to Kizyl-Atrek, beyond the coastal region, where it meets the main highway leading to Kizyl-Arvat on the Turkestan Trunk Line. Gasan-Kuli is connected by a dirt road to the more heavily populated area of irrigation agriculture which lies east of the coastal region. From Adzhi-Yab, 10 miles southeast of Gasan-Kuli, a dirt road leads southward across the international border.

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Fig. 10. 10. Group of people in water that are
standing in formation.

- 10 -

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C. Sea Lanes

There is regular steamship service between Krasnovodsk and Baku (213 miles, 20 hours). Sea lanes also extend from Krasnovodsk to Pahlevi, Iran (276 miles); to Kara-Bogas-Gol (142 miles); to Astrakhan^o (600 miles); and to Chikishlyar (130 miles).

D. Airlines

Regularly scheduled airlines connect Krasnovodsk with Ashkhabad and Moscow. A regional, non-scheduled airline connects Gasan-Kuli with Kizyl-Arvat and with Kara-Kala.

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VIII. Military Installations *

According to readily available data, military installations other than border security facilities are found only in the Krasnovodsk locality. An airfield reportedly now being used by the Soviet Air Force for training purposes is located 2 miles north of Krasnovodsk. The field has 2 concrete runways slightly exceeding 3,000 feet in length. It also handles civil traffic. The small airfield near Gasan-Kuli apparently has never been used for military purposes.

Krasnovodsk serves as a minor base for the Caspian Sea Fleet. This fleet is primarily a training unit consisting largely of small vessels such as torpedo boats, minesweepers, gunboats, and patrol boats. Logistically the Krasnovodsk base is incapable of supporting anything larger than patrol craft. A small repair yard near the village of Ufra was expanded during World War II into a shipyard for the construction and repair of vessels operating with the Caspian fleet.

* Data on military installations are based entirely on information readily available to the Geography Division of CIA. They do not necessarily indicate the total amount of militarization of the region. Locations are approximate.

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II. Analyst's Note

With exception of the city of Krasnovodsk and the Neftedag petroleum fields, little information on the Krasnovodsk - Gasan-Kuli Coastal Region appears in U.S. intelligence documents or in Soviet geographic literature. The physical factors of terrain, vegetation, hydrography, and climate are fairly accurately and rather completely described. The delineation of the Caspian coastline is approximate. For the cultural factors of population, settlement, and transportation, only an incomplete but generally reliable account is given.

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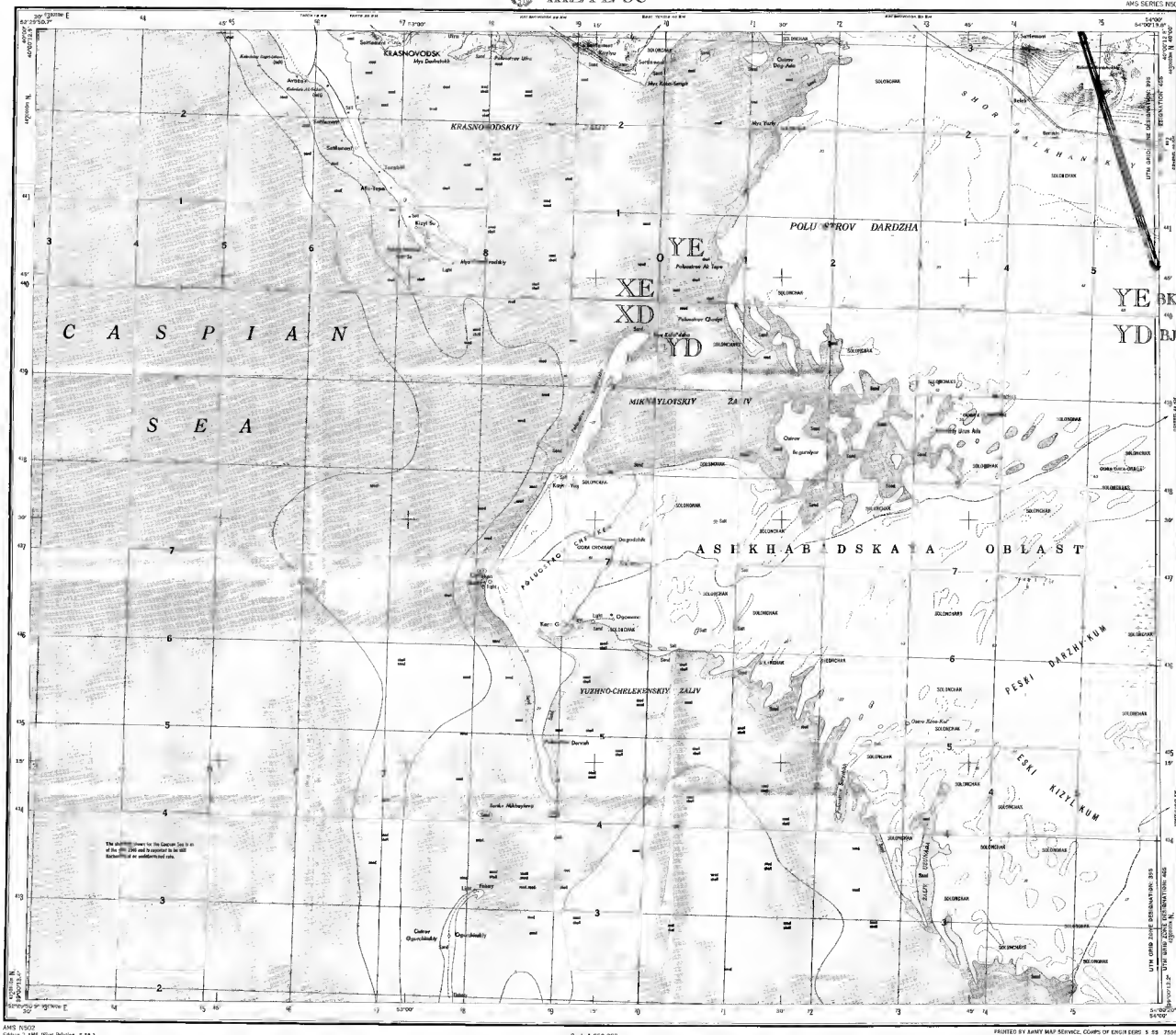
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AMS SERIES 10000

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LEGEND

Figures in this legend approximate
values of information in the map.

POPULATED PLACES

POPULATED PLACES	ALMA-ATA	CHIMKENT	FERGANA
50,000 to 100,000	ALMA-ATA	CHIMKENT	FERGANA
10,000 to 50,000	ALMA-ATA	CHIMKENT	FERGANA
5,000 to 10,000	ALMA-ATA	CHIMKENT	FERGANA
1,000 to 5,000	ALMA-ATA	CHIMKENT	FERGANA

Other symbols, all symbols

Other symbols, all symbols	ALMA-ATA	CHIMKENT	FERGANA
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FERGANA	ALMA-ATA	CHIMKENT	FERGANA

AMK 10002
Edition 2-AMS, 1974, 1975, 1976, 1977
Prepared by the Army Map Service (AMS), Corps of Engineers, U.S. Army, Washington, D.C. Consulted in 1973
The map is a reproduction of the map of the U.S.S.R. (Kizyl-Su) prepared in accordance with the map of the U.S.S.R.
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Scale 1:250,000
Interval of approximate contours 20 meters
Transverse Mercator projection
Horizontal datum is based on approximate spherical datum
Place names are in Cyrillic script. Transliterations are in Latin script. All place names are in Latin script.

Glossary
Landmarks, points of interest, etc.
Landmarks, points of interest, etc.
Landmarks, points of interest, etc.

THE SCALE OF THIS MAP IS APPROXIMATE
AND SHOULD NOT BE USED FOR MEASUREMENTS
OF DISTANCE OR AREA.

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BUGOR KYZMAMA



THE DELINEATION OF INTERNATIONAL BOUNDARIES ON

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Figures in red denote symptomatic
patients with ≥ 2 symptoms. Δ denotes asymptomatic

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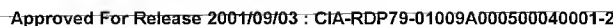
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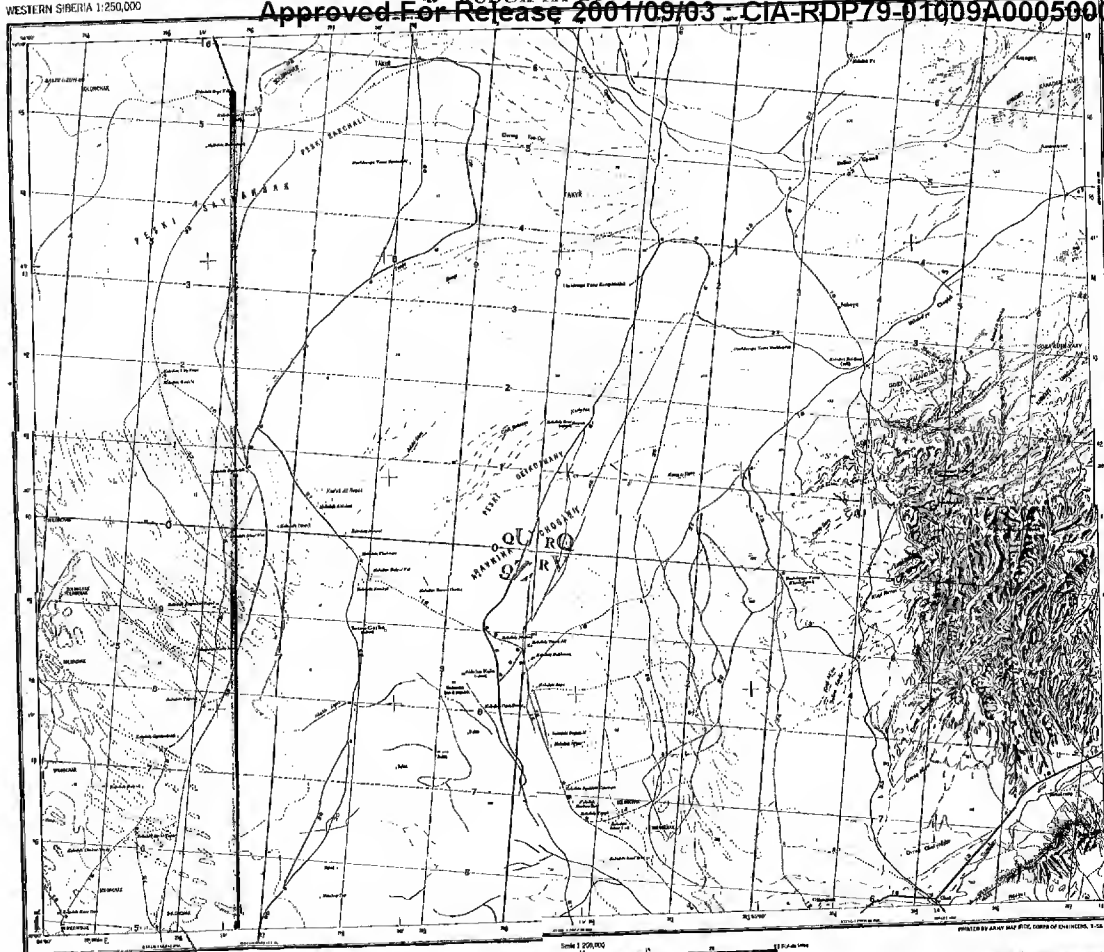


KYZMAMA, U.S.S.R.

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POPULATED PLACES

NAME	POPULATION	DATE
KUDUK AT-BOGAZ	10,000	1958
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Other administrative data and notes are present in this section, including information about the map's production and distribution.

NOTE: This map is based on the latest available data. It is subject to change without notice. The map is not to be used for navigation purposes. It is intended for reference only.

LEGEND:

Symbol	Description
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Scale 1:250,000

1 inch = 6.3 miles

1 centimeter = 0.39 inches

1 kilometer = 0.62 miles

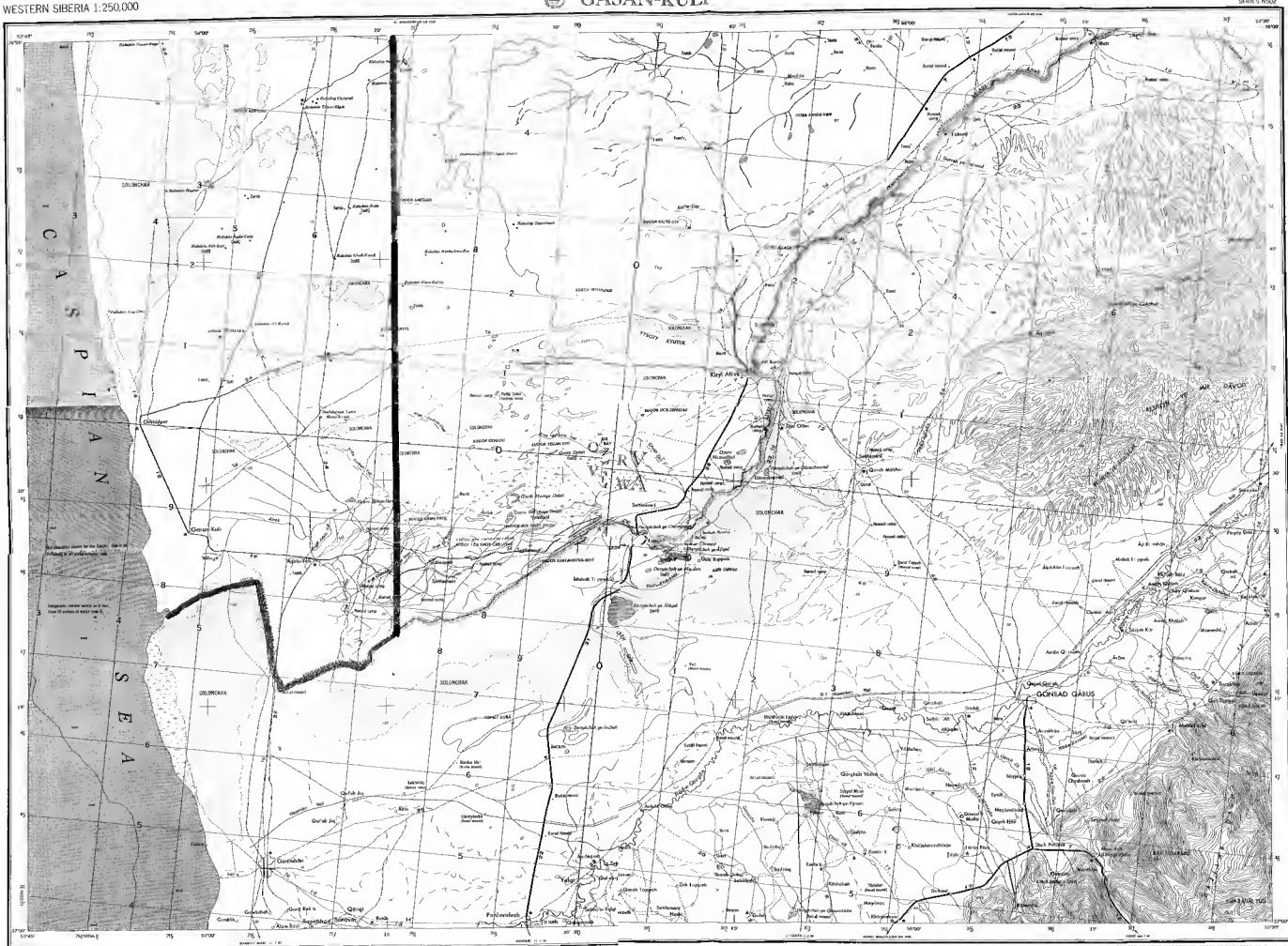
1 mile = 1.6 kilometers

1 nautical mile = 1.15 statute miles



KUDUK AT-BOGAZ, U.S.S.R., 1958

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THE DELINEATION OF INTERNATIONAL BOUNDARIES ON
MAPS MUST NOT BE CONSIDERED AUTHORITY

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1 Substations between 7 states

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QUESTION 10777: Capital (K) and labor (L) are inputs into the production of output (Y) according to the following production function:

$$Y = 0.25K^{0.5}L^{0.5}$$

QUESTION 10778: Suppose that the economy has 100 units of capital and 100 units of labor. How much output can be produced?

ANSWER 10777: Capital (K) and labor (L) are inputs into the production of output (Y) according to the following production function:

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ANSWER 10778: Suppose that the economy has 100 units of capital and 100 units of labor. How much output can be produced?

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Air Photo 3. The city of Krasnovodsk.



Air Photo 2. The Ultra promontory.



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Air Photo 1. The escarpment of the Krasnovodsk Plateau, immediately souther the city of Krasnovodsk.

